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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/839,459

04/19/2001

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EXAMINER

PAN, DANIEL H

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/839,459

Applicant(s)

MUKHERJEE, SHUBHENDU S.

Examiner

pan

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-15, 22 and 23 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) 3-7 and 18-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2 04/19/01 & 04/15/02
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,2,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lomax (6,493,740) in view of Bressound et al. (5,802,265).

As to claim 1, Lomax disclosed a multithreaded processing comprising system at least :

- a) a pipelined concurrent processor [3] (e.g. see fig.1B);
- b) a system memory [main memory] ;
- c) a first thread [828] and a second thread [830], wherein read command (see the pointer for access of the data segment ) appeared in the second thread , the processor load the current data value and replicated the data value in the second thread (e.g. see the copy of the data segment in col.14, lines 42-64)

3. AS to claim 16, disclosed a system including the thread and second thread comprising at least :

- a) probing a context data to fetch a current value when the lead thread requested the data (e.g. see the pointing of the data segment and the access of the data segment by the thread 828 in col.14,. lines 12-31 for shared and non shared data functions);

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b) storing the context data in a queue [data segment] (e.g. see the copy made in data segments in col.14, lines 12-31 );

c) probing the cycle count queue [data segment] for corresponding request in a second thread (e.g. see the sharing of the segment copy by second thread 830 in col.14, lines 41-51).

4. As to claims 1,2, 16, 17, above, Lomax did not specifically show his replication of the context data (see the context data copy) was the replication of the cycle counter as claimed. However, Bressound disclosed a maintenance of a cycle count in a thread (col.5, lines 45-53, see also col.7, lines 25-55 for specific time counter). It would have been obvious to one of ordinary skill in the art to for using Bressound in Lomax for including the counter information of Bressound into Lomax for replicating the cycle count as claimed because the use of the of Bressound could enhance the control ability of Lomax to accept particular type of the system parameters , such as the cycle or clock information, thereby increasing the adaptability of Lomax based on the specific system requirement, and eliminating the latency of the additional threads for reading the same data, and it could be achieved by defining the counter information of Bressound, such as the byte length , the count cycle, of the thread into the configuration file of Lomax, such that the cycle count could be recognized by Lomax, and because Lomax also taught that a second thread must wait to gain access in a mutual exclusive mechanism to access the same data to avoid the faulty process (e.g.

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see col.2, lines 5-32), which would have been a suggestion of the need for considering the access cycle (e.g. read/write cycles) of the thread command due to the wait time by the second thread, and because Bressound also suggested the use of his cycle counter into the thread applications as an option (e.g. see col.5, lines 45-53), and in doing so, provided a motivation. Lomax is used as primary reference because it showed detailed structure of the thread, and the clear teaching of the replication of context data (e.g. see fig. 11).

5. As to the claimed language of the "redundant threaded processor" (claim 1, line2), or SRT (claim 16), since the claims never recite that the trailing thread (or the second thread), was a redundant thread, the redundant thread processor is assumed to be a general type of the threaded processor. The examiner believes that only the language "redundant threaded processor" is not sufficient to show the characteristics of a redundant thread. Furthermore, Bressound did show the use of his system in fault-tolerant in threaded applications (see col.5, lines 44-62, a fault tolerant system must have a redundant entity either in software or hardware, and/or the combination), and Lomax did have the concern for the faulty process (e.g. see col.2, lines 5-12). Applicant is welcome to provide feedback in the next response.

6. Claims 3-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record teaches access of the cycle count queue and not the cycle count to load the cycle count values in response to the read cycle count instructions in the trailing thread.

7. Claim 8-15 are allowable over the art of record for reciting the combined feature of the two redundant copies of the program thread and the avoidance of the false error caused by the incorrectly replicating the cycle count in the redundant program threads by the actual values from the cycle count reads in the first program thread for second program thread.

8. Claims 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the combined features of the cycle count and program identifier.

9. Claims 22-23 are allowable over the art of record for reciting the combined features of the stalling the execution of the leading thread when the read cycle command was encountered in the leading thread, the execution of the trailing thread

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until the RCC command was encountered in the leading thread, and the fetching of the single copy of the cycle count from the counter and distribution of the count to both threads.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Rodgers et al. (6,357,016) is cited for the teaching of the detection of a clock signal in a multi-threaded system (e.g. see fig.16, lines 11-30).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 703 305 9696. The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 703 305 9712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL H. PAN  
PRIMARY EXAMINER  
GROUP 1.25